Information Request NSTAR-DOER-1-1

Please provide copies of (1) any and all prefiled testimony or reports (including all associated exhibits and attachments) submitted by Dr. Pereira to state and federal regulatory authorities from 1999 to the present; and (2) any and all transcripts of Dr. Pereira's testimony at hearings (adjudicatory or non-adjudicatory) before state and federal regulatory authorities from 1999 to the present.

Response

Dr. Pereira has not submitted prefiled testimony or reports to any state or federal regulatory authority, nor has he testified in a hearing before any state or federal regulatory authority.

Information Request NSTAR-DOER-1-2

Provide copies of any and all regulatory decisions addressing the issues covered by Dr. Pereira in testimony provided in response to Information Request NSTAR-DOER-1-1. Identify the decision making authority, docket number, year of the decision, and any official citation to the decision.

Response

There are none.

Information Request NSTAR-DOER-1-3

Please Identify all documents relied upon by Dr. Pereira in preparing this testimony. Please provide a copy of each identified document.

Response

For a list of the studies referenced in my testimony, I refer you to Exhibits DOER-AEP-1 and DOER-AEP-2 of my testimony. The Internet links were provided to facilitate access to those documents. These studies have been included as Attachment NSTAR-DOER-1-3(a).

I also include three studies that I relied upon in my discussion of the locational elements of distribution system costs and benefits to applying distributed resources at specific locations. The first was obtained from the Clean Power website (http://www.clean-power.com/research.asp) and is titled "Distributed Generation: An Alternative to Electric Utility Investments in System Capacity." The second is titled "A New Utility DSM Strategy Using Intensive Campaigns Based on Area-Specific Costs." The third is titled "Costing Methodology for Electric Distribution System Planning." These studies have been included as Attachment NSTAR-DOER-1-3(b).

Due to the heavy volume of these documents, I have provided them as **BULK DOCUMENTS** and electronicaly on disk for the Company and the Department. Intervenors interested in obtaining hard copies of these documents can either access the electronic links in my testimony or contact DOER for copies.

D.T.E. 03-121
Information Request: NSTAR-DOER-1-3

April 6, 2004

Attachment NSTAR-DOER-1-3(a)
**Provided as a BULK DOCUMENT**

D.T.E. 03-121
Information Request: NSTAR-DOER-1-3

April 6, 2004

Attachment NSTAR-DOER-1-3(b)
**Provided as a BULK DOCUMENT**

Information Request NSTAR-DOER-1-4

Please provide a copy of any and all articles, papers, speeches or other reports prepared in whole or in part by Dr. Pereira addressing, distributed generation, standby rates and/or rate design.

Response

There are no such documents.

Information Request NSTAR-DOER-1-5

Referring to page 3, lines 23-24, please provide the basis for the statement that the response to Information Request DOER-1-18 "assumes that the Companies were recovering their full cost of service under the current rates."

Response

Lines 23-24 should have read "assumes that the Companies were **not** recovering their full cost of service under current rates." This assumption is based on the fact that the Company has filed for revised rates that increase revenues from this class of customers. Presumably, the company would only do that if it believed that it was not recovering its costs in providing this service.

Information Request NSTAR-DOER-1-6

Referring to page 3, lines 24-25, please provide the basis for the statement that the response to Information Request DOER-1-18 "assumes…that the customers with distributed generation impose new or different costs on the Companies."

Response

In Information Request DOER-1-18, NSTAR states that "under current standby service, standby service customers do not pay the full cost that is incurred by the Company to provide standby service…" Clearly, this statement implies that customers with distributed generation impose new or different costs on the Companies that had not been accounted for in existing rate structures and tariffs.

Information Request NSTAR-DOER-1-7

Referring to page 3, lines 30-32, and Mr. Periera's statement that "there are studies that suggest that [DG] customers may be contributing a benefit to the system and thereby the non-standby customers by the presence of the on-site generation", please provide the following:

(a) a copy of any and all studies performed by Mr. Periera or DOER that assess the benefit of existing DG installations in the service territories of Boston Edison, Cambridge Electric or Commonwealth Electric;

(b) a quantification of the amount of benefit from such DG installations in the service territories of Boston Edison, Cambridge Electric or Commonwealth Electric; and

(c) data, studies, analyses and reports responsive to parts (a) and (b) above with respect to any other electric distribution company in Massachusetts.

Please identify all assumptions and data sources used in these studies.

Response

(a) No studies have been conducted by myself or DOER that assess the benefit of existing DG installations in any service territory. DOER is interested in participating in conducting such an analysis. But, such an analysis would require the sharing of certain Company-specific information.

(b) Plese see response to (a) above.

(c) Plese see response to (a) above.

Information Request NSTAR-DOER-1-8

Referring to page 4, line 8, please define the term "cost subsidization" and provide a copy of any and all documentation that supports the definition.

Response

Cost subsidization in the context of traditional cost of service ratemaking is commonly understood to mean payments by one class of customers related to costs incurred or benefits enjoyed specifically by customers of another class or classes. In their book, *Principles of Public Utility Rates*, Bonbright, Danielsen, and Kamerschen state, "..the principle that the costs of supplying public utility services should be borne, as far as feasible, by those customers who derive a benefit from the particular outlays in question"(p. 274). This definition appears to be consistent with the Company's own use of the term in its filing and in its data responses, particularly Information Request DOER-1-18.

Information Request NSTAR-DOER-1-9

Referring to page 4, line 18, please identify the "current standby rates" in effect for Boston Edison, Cambridge and Commonwealth. Provide a copy of any and all documents that relate to this response.

Response

My testimony was referring to the tariff sheets provided by Cambridge Electric in this proceeding that the Company has proposed to close. These rates would not have been approved by the Department initially if they created undue cross subsidies at the time. Since the Company has not shown any changed conditions since then that would cause a new subsidy or under-recovery of costs, I see no reason to close or revise the rate. Similarly, for those service territories without differentiated standby rates (Boston Edison and Commonwealth), the Company has not identified any changed conditions or costs that warrant a new standby rate.

Information Request NSTAR-DOER-1-10

Referring to page 4, lines 26-28, please provide any studies performed by Mr. Periera or DOER that identify the degree to which the existing rates of any of the NSTAR Electric companies contain subsidies and which rate class(es) are subsidizing which other rate class(es).

Response

The only studies that were consulted to determine the extent of subsidies were the Company's responses to Information Request DTE-2-25. A more current study can only be performed with a fully allocated cost of service study. That type of study cannot be done without a filing by the Company.

Information Request NSTAR-DOER-1-11

Referring to page 4, lines 26-28, is it Mr. Periera's contention that existing DG installations in the service territories of NSTAR Electric companies are subsidizing non-standby customers? If so, please identify with specificity the DG installations where those subsidies are occurring in the NSTAR Electric service territories and the amount of the subsidies. Please provide all data, calculations and assumptions in support of these studies.

Response

Dr. Pereira does not contend that existing DG installations in the NStar service area are subsidizing customers. The above question misreads the reference in his testimony. Dr. Pereira merely states that it is possible. The point of this statement is that NStar has not supported its contention that they do.

Information Request NSTAR-DOER-1-12

Referring to page 5, lines 10-11, please describe the manner by which the Company would account for and compute the "location-specific costs and any potential benefits from installation of DG."

Response

Under traditional embedded cost-of-service, the Company accounts for and computes utility-area costs for providing distribution service and allocates them to different rate classes. Similarly, the benefits that may accrue due to investment in this distribution network are usually shown on a systemwide level and, even though these benefits may be location specific, their costs are spread across all rate classes on the basis of non-coincident demand which is not location specific. As the Company has stated, it is time for a "next generation" of rates. These rates need to include these location-specific benefits and acknowledge that there are locational elements to costs.

In terms of providing more specifics regarding the manner by which the Company could account for these types of costs and benefits, I refer to the three studies identified in my response to Information Request NSTAR-DOER-1-3. In addition, Mr. Lively has described a related approach in his testimony in his response starting on page 22, line 529.

Information Request NSTAR-DOER-1-13

Referring to page 5, lines 13-15, please describe the manner by which existing rates "account for location differences distribution-system costs." Provide a copy of any and all documents that relate to this response.

Response

They do not, which is a clear weakness of current rates. More importantly, because the proposed rates are simply a variation of current rates, they also suffer from the same weakness. Please see the response to Information Request NSTAR-DOER-1-12.

Information Request NSTAR-DOER-1-14

Referring to page 5, line 29 through page 6, line 1, is it Mr. Pereira's contention that the Company has asserted that "standby customers incur a greater share of fixed costs than non-standby customers or that standby customers are more fixed in nature"? If so, please provide the basis for that position, with citations to the record in this case.

Response

Though the Company has not directly asserted this position, Mr. LaMontagne did state in his testimony (p. 14 at line 7-8) that the "type of rate element used to recover costs is largely a function of the type of cost that is being recovered." Given that the proposed rates feature rate elements that are more fixed, it is logical to conclude that the Company believes that the customers for which these rates would apply—standby customers—would feature costs that are more fixed in nature.

Information Request NSTAR-DOER-1-15

Referring to page 7, lines 13-14, is it Mr. Periera's contention that properly designed standby rates should include terms that quantify and ascribe value to "societal benefits, such as, for instance, [reduced] environmental impacts of air emissions from centralized sources of generation"?

Response

Please see response to NSTAR-DOER-1-23.

Information Request NSTAR-DOER-1-16

Referring to page 8, lines 6-7 and Exhibit DOER-AEP-2, please provide: (a) a detailed explanation of each calculation that resulted in the values set forth in Exhibit DOER-AEP-2, including specific page numbers or other relevant citations for each of the citations listed under "Source URLs"; and (b) a copy (in paper and electronically) of all calculations, workpapers, spreadsheets or other documents that show each calculation that resulted in the values set forth in Exhibit DOER-AEP-2.

Response

(a) Regarding Study 1 illustrated in Exhibit DOER-AEP-2 'Benefits from Installation of DG – Results of Selected Studies', *End-User Distributed Generation Applications in Cape Light Compact Communities*, an excerpt has been taken from page 7 of the study which details the Transmission and Distribution capacity benefit data found in DOER-AEP-2.

Source URL:
1. http://www.capelightcompact.org/FIN%20END%20USER%20DG%20RPT.pdf

**TRANSMISSION CAPACITY BENEFIT**
For peak operation only, DGs are credited with a minimum of 1.6 $/kW-yr (determined in the utility-perspective study that is the companion to this report, based on actual NSTAR transmission capacity expenditures) and a maximum of 10.0 $/kW-yr (national average) [Ref.8]. Analysis of the Commonwealth Electric transmission capital expenditures for the last five years shows an annual average expenditure of about 8.0 $/kW-yr, which falls in the middle of this range.
**DISTRIBUTION CAPACITY BENEFIT**
For peak operation only, DGs are credited with a minimum of 4.3 $/kW-yr (based on actual NSTAR distribution capacity expenditures). Analysis of the Commonwealth Electric distribution capital expenditures for the last five years shows an annual average expenditure of about 31.0 $/kW-yr. The national average figure is 20.0 $/kW-yr [Ref.8]

Details of the Ancillary Services and Reliability benefit included in Study 1 of Exhibit DOER-AEP-2 can be found on pages 8 & 9 of the Cape Light study. The excerpt on these benefits is below.

**RELIABILITY BENEFIT**

If DG reduces the likelihood that electric service is interrupted to residential, commercial or industrial loads, then the DG may provide a reliability benefit. This benefit represents the financial losses that are avoided by operating the DG when the grid service is not available.

The benefits of reliability enhancement were estimated based on utility industry information in a paper authored by R. Pupp and C-K Woo [Ref. 2]. A wide range of benefits was cited for each customer class, based on a survey of numerous customers throughout the US. In DUA's estimation, values of 3.0 $/kWh for residential, 10.0 $/kWh for industrial, and 20.0 $/kWh for commercial customers represent reasonable values to ascribe to lost service.

The Commonwealth Electric 10-year average SAIDI (system average interruption duration index) for the period 1993-2002 was 127 minutes per year, not including outages that affected more than 15% of customers. Assuming 130 minutes of interruption per year for the purposes of this study, the yearly reliability benefits for the three customer classes are as shown in Table 4.

A DOER modified version of Table 4 is below including only the Reliability Benefits.

**Table 4. Reliability Benefits**

| | **Reliability Benefit $/kW-yr** |
|---|---|
| Industrial | 21.7 |
| Commercial | 43.3 |

**ANCILLARY SERVICES BENEFIT**

Ancillary services include maintaining the balance between electric load and electric supply by generation dispatch, maintaining system voltages and frequency, and other attributes of the bulk power system that relate to system reliability, security and integrity. These functions have historically been provided by central utility generation, and there

does not yet exist a formal marketplace for ancillary services that could be provided by DGs. However, it can be argued that, depending on how and when DGs operate, and depending on how much DG capacity is in use, DGs could indeed provide these services. At minimum, by providing electric energy on-site, load on the grid is reduced, thus reducing the need for ancillary services from central generation.

While there is some precedent in recent energy markets as to the potential value of ancillary services on a capacity basis, the actual monetary values that have been seen in these markets range widely due to time- and location-specific factors.

For this study, ancillary benefits associated with DG use are assumed to be worth 10.0 $/kW-yr, with a range of 8.0 to 12.0 $/kW-yr. This figure was arrived at in consultation with a knowledgeable industry expert, and is deemed to be a reasonable estimate based on experience in the industry to date [Ref. 6]. The end-user model then treats this benefit as a range of 0.0 to 10.0 $/kW-yr to reflect the uncertainty of applying it in varying situations.

Regarding Study 2 illustrated in Exhibit DOER-AEP-2 'Benefits from Installation of DG – Results of Selected Studies', *Performance and Value Analysis of the Kerman 500 KW Photovoltaic Power Plant*, benefit data was extracted from Table 1 found on page 4 of the Study. The Benefits Evaluation Approach used by the Study's Authors can be found starting on page 3.

Source URL:
2. http://www.clean-power.com/research/distributedgeneration/KermanAPC.pdf

Regarding Study 3 illustrated in Exhibit DOER-AEP-2 'Benefits from Installation of DG – Results of Selected Studies', *Distributed Generation: Understanding the Economics*, benefit data was extracted from Table 3.4 'Typical Grid Side Benefits' on page 25 of the Study. An excerpt on electric utility benefits from pages 24-25 of the study is below.

DG at the customer's site can also provide benefits to the electric utility. DG benefits identified by utilities include the following:
• Avoided increases in system capacity—*DG can provide an additional source of power that could preclude the need to expand the generation, transmission, and distribution system to meet increased demand.*

• Reduced T&D electric losses—*DG avoids electric losses associated with transporting power over the T&D system.*
• T&D upgrade deferrals—*Utilities can use DG to meet growing demands and defer investment in T&D capacity.*
• VAR support—*Some DG technologies can provide reactive power (VARs) that can aid utilities in maintaining system voltage.*
• Transmission congestion relief—*By generating power at or very near the point of consumption where there is congestion, DG can increase the effective T&D network capacity for other customers.*
• Peak shaving—*DG can reduce customer demands from the grid during highdemand periods.*
• Reduced reserve margin—*By lowering overall demand levels for grid power and providing generation capacity, DG could reduce reserve margins.*
• Improved power quality—*DG can eliminate demand that negatively affects the power quality of the grid system.*
• Increased power reliability—*DG can reduce or avoid outages in certain parts of the distribution system.*
• Avoided T&D siting concerns—*By eliminating the need for new transmission and distribution lines, DG can avoid societal concerns over adding transmission lines.*

Source URL:
3. http://www.eere.energy.gov/distributedpower/pdfs/library/adl_dg_econ.pdf

(b) There are no workpapers, spreadsheets other than the studies that show the benefit calculations.

Information Request NSTAR-DOER-1-17

Referring to page 8, lines 15-16, please identify any specific instance in 2002 or 2003 where the installation of a DG facility resulted in NSTAR Electric avoiding a monetary penalty under its SQI plan." Provide a copy of any and all documents that relate to this response.

Response

As stated above, location specific costs and benefits need to be considered in examining improvements or degradations in the distribution system. However, the Company has publicly stated that it has made considerable investment in its distribution system over the last several years. For instance, according to the Company's 2003 Annual Service Quality Reports, the Company reported that it had spent a total of $164.56 million on electric upgrades during 2002.[1] An analysis of the DG installations on the system, particularly where those upgrades have taken place, would be a good indication of the benefits of the DG presence prior to the upgrades, or indeed, the avoidance of more significant upgrades at those locations. The company should be required to present that analysis as a part of this proceeding.

[1] The Company's data on capital expenditures for the ten most recent years (1994 through 2003) is provided in Appendix 8 of the Company's Annual Service Quality Reports for Cambridge Electric, Commonwealth Electric, and Boston Edison (Back-up Data and Supporting Schedules, Appendix 8: Capital Expenditures, December 31, 2003).

Information Request NSTAR-DOER-1-18

Referring to page 8, lines 25-27, please (a) provide any and all examples and (b) quantify the "high value" associated with the deployment of on-site generation. Provide a copy of any and all documents that relate to this response.

Response

Please see response to NSTAR-DOER-1-3.

Information Request NSTAR-DOER-1-19

Referring to page 9, line 28 through page 10, line 1, please provide any and all documents that describe, refer to or otherwise relate to the referenced "State Climate Action Plan."

Response

At this time, the "State Climate Action Plan," has not been finalized and, therefore, DOER is unable to produce the information requested. Dr. Pereira has been an internal reviewer of the current draft Plan, and therefore has personal knowledge of the anticipated contents on these issues. For this reason Dr. Pereira referred to its development in his testimony to clarify that this issue is an important policy matter for the Administration. DOER anticipated that the Administration's Climate Change Action Plan would be released as a complete and final document prior to the conclusion of this proceeding but its release has been delayed. DOER will provide it as soon as it is available.

The State Climate Action Plan, however, has been developed as a part of a broader regional approach embodied in the Climate Change Action Plan of the New England Governors/Eastern Canadian Premiers NEG/ECP. Action 5 of that plan is a goal to reduce greenhouse gases from the electricity sector (see Plan at page 13). That Action Item presents a recommendation to achieve the goal "through a combination of new renewable energy sources including solar, wind and bioenergy among others, by using lower carbon fuels, increasing the efficiency of the electricity generation and transmission system and the **use of new, efficient distributed generation**." (emphasis supplied). Dr. Pereira has participated on the Climate Change Subcommittee of the NGC/ECP.

Please refer to Attachment NSTAR-DOER-1-19.

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Attachment NSTAR-DOER-1-19

Information Request NSTAR-DOER-1-20

Referring to page 10, lines 1-6, please provide a copy of any and all documents that describe, refer to or otherwise relate to the referenced "emissions regulations for distributed generation."

Response

Please refer to Attachment NSTAR-DOER-1-20(a), (the early draft provided by the Massachusetts Department of Environmental Protection, for comment by interested parties, and related notes and documents). The Department of Environmental Protection has not yet released this draft regulation for formal public hearing and comment. Attachment NSTAR-DOER-1-20(b) contains internal DOER communications on the above draft regulation.

One responsive document has been withheld as privileged. See below.

| Date | Document | Privilege |
|---|---|---|
| 9/10/03 | Draft of DEP regulation with legal staff's notes to DOER staff. (Same draft as provided in Attachment NSTAR-DOER-1-20(a).) | Attorney work product |

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Attachment NSTAR-DOER-1-20(a)

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Attachment NSTAR-DOER-1-20(b)

Information Request NSTAR-DOER-1-21

Referring to page 10, lines 25-26, please provide a complete copy of the referenced "report conducted by the Governor's Task Force on Electric Reliability and Outage Preparedness."

Response

Please refer to the response to NSTAR-DOER-1-3. The referenced Report is included in that bulk document.

Information Request NSTAR-DOER-1-22

Referring to page 12, line 1, please provide a copy of any and all documents that describe, refer to or otherwise relate to the referenced "analysis we conducted at DOER."

Response

The supporting work papers have been attached as Attachment NSTAR-DOER-1-22(a) and (b).

The only other documents related to the analysis are the relevant Company rate tariffs used in the bill analysis.

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Information Request: NSTAR-DOER-1-22

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Attachment NSTAR-DOER-1-22(a)

# Attachment NSTAR-DOER-1-22(a)

**NSTAR, Boston Edison, Rate G-2, M.D.T.E. No. 131B, pages 1-2**

**DG Summer Month RATE EXAMPLE**

**Assuming 300 kw Customer with 194,400 kWh Usage**

| | Rates ($/kw-hr) | Customer without DG | Customer with DG and Supplemental Service (200 kw DG & 100 kw Supplemental) | | | | |
|---|---|---|---|---|---|---|---|
| | | Rates ($/mo) | | | 100% cf | 85% cf | nstar - supp |
| **Customer Charge** | | $ 18.19 | $ 18.19 | | 144000 | 122,400.00 | 72,000.0 |
| **Distribution (demand) (Based on Contract Demand SB-G-2)** | | $ 20.22 | $ 24.26 | | 148800 | | |
| **Total Distribution (demand) Costs** | | $ 6,066.00 | $ 7,278.00 | | 74400 | | |
| **Distribution (energy) I** | $ 0.02136 | 2000 | 2000 | | 45000 | | |
| **Distribution (energy) II** | $ 0.00811 | 45000 | 45000 | 45000 | | | |
| **Distribution (energy) III** | $ 0.00500 | 147400 | 25000 | | 50600 | 72,000.00 | |
| **Distribution (energy) Total** | | $ 1,144.67 | $ 532.67 | | | | |
| **Transition (energy) I** | $ 0.09774 | 2000 | 2000 | | | | |
| **Transition (energy) II** | $ 0.01940 | 45000 | 45000 | | | | |
| **Transition (energy) III** | $ 0.00351 | 147400 | 25000 | | | | |
| **Transition (energy) Total** | | $ 1,585.85 | $ 1,156.23 | | | | |
| **Transmission (demand)** | | $ 1,316.60 | $ 408.60 | | | | |
| **Transmission (energy)** | $ 0.00019 | $ 8.93 | $ 3.23 | | | | |
| **Supplier Services** | | $ 9,914.40 | $ 3,672.00 | | | | |
| **SBC** | | $ 972.00 | $ 360.00 | | | | |
| **SUBTOTAL (Customer, T&D, SBC)** | | **$ 11,112.24** | **$ 9,756.92** | $ 1,355.32 | | | |
| **TOTAL (including supply)** | | **$ 21,026.64** | **$ 13,428.92** | $ 7,597.72 | | | |
| **SUBTOTAL Savings %** | | | **13.9%** | | | | |
| **TOTAL Savings %** | | | **56.6%** | | | | |
| **AVOIDED RETAIL COSTS per KW (assuming 300 kw customer)** | | | $ 37.99 | | | | |
| **Annual Subtotal Savings** | | | $ 16,263.89 | | | | |
| **Annual Total Savings** | | | $ 91,172.69 | | | | |

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Attachment NSTAR-DOER-1-22(b)

# Attachment NSTAR-DOER-1-22(b)

**NSTAR, Boston Edison, Rate G-2, M.D.T.E. No. 131B, pages 1-2**

**DG Summer Month RATE EXAMPLE**

**Assuming 300 kw Customer with 194,400 kWh Usage**

| | | Customer without DG | Customer with DG and Supplemental Service (200 kw DG & 100 kw Supplemental) | | | | |
|---|---|---|---|---|---|---|---|
| | Rates ($/kw-hr) | Rates ($/mo) | | | 100% cf | 85% cf | 194400 nstar - supp |
| **Customer Charge** | | $ 18.19 | $ 18.19 | | 144000 | 122,400.00 | 72,000.00 |
| **Distribution (demand) (Based on Contract Demand SB-G-2)** | | $ 20.22 | $ 24.26 | | 148800 | | |
| **Total Distribution (demand) Costs** | | $ 6,066.00 | $ 7,278.00 | | 74400 | | |
| **Distribution (energy) I** | $ 0.02136 | 2000 | 2000 | | 45000 | | |
| **Distribution (energy) II** | $ 0.00811 | 45000 | 45000 | 45000 | | | |
| **Distribution (energy) III** | $ 0.00500 | 147400 | 104200 | | 50600 | 72,000.00 | |
| **Distribution (energy) Total** | | $ 1,144.67 | $ 928.67 | | | | |
| **Transition (energy) I** | $ 0.09774 | 2000 | 2000 | | | | |
| **Transition (energy) II** | $ 0.01940 | 45000 | 45000 | | | | |
| **Transition (energy) III** | $ 0.00351 | 147400 | 104200 | | | | |
| **Transition (energy) Total** | | $ 1,585.85 | $ 1,434.22 | | | | |
| **Transmission (demand)** | | $ 1,316.60 | $ 408.60 | | | | |
| **Transmission (energy)** | $ 0.00019 | $ 8.93 | $ 3.23 | | | | |
| **Supplier Services** | | $ 9,914.40 | $ 7,711.20 | | | | |
| **SBC** | | $ 972.00 | $ 756.00 | | | | |
| **SUBTOTAL (Customer, T&D, SBC)** | | **$ 11,112.24** | **$ 10,826.91** | $ 285.33 | | | |
| **TOTAL (including supply)** | | **$ 21,026.64** | **$ 18,538.11** | $ 2,488.53 | | | |
| **SUBTOTAL Savings %** | | | **2.6%** | | | | |
| **TOTAL Savings %** | | | **13.4%** | | | | |
| **AVOIDED RETAIL COSTS per KW (assuming 300 kw customer)** | | | $ 12.44 | | | | |
| **Annual Subtotal Savings** | | | $ 3,423.98 | | | | |
| **Annual Total Savings** | | | $ 29,862.38 | | | | |

Information Request NSTAR-DOER-1-23

Referring to page 14, lines 24-30, please identify the specific exemptions that Mr. Periera believes should apply in Massachusetts to renewable sources of DG in relation to paying a distribution company's tariffed standby rates.

Response

Dr. Pereira is not recommending any specific exemptions at this time. As stated in his testimony, he believes that exemptions should be considered by the Department. DOER has not formulated a position on exemptions at this time. However, Dr. Pereira sees merit in exemptions for new renewable generation. Such an exemption would be consistent with the dual goals of the State to encourage the development of new renewable energy, as reflected in the Renewable Energy Portfolio Standard, and the reduction of greenhouse gases. Other witnesses have presented recommendations in this regard. After a complete development of the issues on this subject, DOER will present its recommendations on brief.

Information Request NSTAR-DOER-1-24

Referring to page 15, lines 8-9, do other costs and benefits to the customer associated with the installation of on-site generation affect the "barriers to wide scale deployment of DG"? If the answer is yes, has the DOER's analysis accounted for such costs and benefits in determining the impact of NSTAR Electric's proposed standby rates? Provide a copy of any and all documents that relate to this response.

Response

Yes, there are factors other than standby rates that may impede widespread deployment of DG. Low load factors or intermittence of resources may be a factor and was accounted for in Exhibit AEP-DOER-3 of my direct testimony. However, the issue before the Commission is not an examination of existing barriers, but an examination of the appropriateness of the standby rates proposed by NSTAR.

Information Request NSTAR-DOER-2-1

Referring to page 3, lines 30-32, and Dr. Pereira's statement that "there are studies that suggest [DG] customers may be contributing a benefit to the system and thereby the non-standby customers by the presence of the on-site generation," please provide a copy of the referenced studies, including any and all data, analyses, assumptions and reports related therto.

Response

I refer you to page 7, lines 19-23, where I state that "there have been numerous studies that have estimated a number of benefits to DG. A recent review of 30 studies was completed by the National Renewable Energy Laboratory (NREL) and showed that distribution and transmission capacity deferral was a benefit mentioned in 24 and 21 of those studies, respectively."

I note that the studies reviewed also looked at a number of system benefits other than the deferral of distribution and transmission capacity costs.

This study can be found as an attachment in my response to NSTAR-DOER-1-3 (within Attachment NSTAR-DOER-1-3(a)).

Information Request NSTAR-DOER-2-2

Referring to page 5, lines 13-15, is it Dr. Pereira's position that NSTAR Electric's standby rates should vary by location? If so: (a) please identify how many different rates would be required and (b) state whether distribution charges for "all-requirements" customers also should vary by location in the same manner? Please explain.

Response

In theory, rates should vary by location. However, there are a variety of reasons, including pragmatism and the existence of externalities—electric distribution service is provided over a network, with its associated interrelationships and network economies—that can and should temper the desire to account for location in a precise manner, hence, the current practice of charging differential distribution rates across customer types or classes but not differentiating within these customer groups by location. Of course, customers do have different costs because of different usage needs, and location can have a major impact. Thus, a seemingly location-neutral billing component, such as kWh, can have locational elements.

I believe it is possible to design rate tariffs that feature similar rate elements within rate classes that account for location without undue complexity in rate structure. Mr. Lively's testimony provides one manner by which such rates could be developed. Also, the studies mentioned in response to Information Request NSTAR-DOER-1-3 contain useful discussion of area-wide marginal costs, which could be used to adjust standby rates. Finally, Ms. Saunders' (p. 9-10) testimony provides examples of adjustments to the proposed rate design that serve to account for location. Unfortunately, it is not possible to design such a tariff in the expedited time that has been allowed for this proceeding, and there has not been enough data presented to identify the exact number of possible rates that would result.

In terms of part (b) of the question, the same logic would apply. Some of these customers are already charged location-differentiated prices through default-service charges which reflect the effects of locational marginal pricing at the NEPOOL level.

Information Request NSTAR-DOER-2-3

Is it Dr. Pereira's position that the distribution facilities serving a particular neighborhood should not be sized to handle the expected peak loads of full-service customers plus the possible peak loads of DG customers in that area? Please explain.

Response

No. It is my position that NStar has not shown that standby customers' existing rates undercollect the costs incurred by the Company in providing service to these customers. Presumably, the Company's current rate structure collects revenue that accounts for the costs caused by all customers, standby and non-standby. It is unclear to me and has not been shown by the Company that addition of distributed generation changes the cost calculus in a manner that is addressed by the proposed rates. As discussed by Mr. Green in his testimony (p.4, lines 5-20), the amount of DG currently in place is far below the level of concern that the Company purports to have regarding expanded installation of DG.

In addition, as Mr. Lively has described in his testimony (p. 17, lines 395-403), distribution systems are planned to meet the **diversified** (emphasis added) peak demands of customers. It is likely that a customer that installs DG will have a lower expected peak load than before, after adjusting for the probability of the DG resource being unavailable. This is due to the fact that the probability of the DG resource being unavailable is somewhat independent from peak-causing factors, such as the weather. Unfortunately, it is not possible to make a definitive statement regarding this probability analysis due the lack of load data comparing existing standby customers to non-standby customers at locations in the Company's distribution network.

Information Request DTE-DOER-1-1

Refer to the Direct Testimony of Alvaro E. Pereira at 11, lines 20-25. Please discuss the proposition that, from a cost-causation perspective, the difference between the treatment of customers that reduce usage through demand-side management and those that use a DG facility could lie in the fact that those customers that reduce usage via demand-side management have permanently removed load from the utility system, while those customers using DG will likely need to use the utility system at some point in the future.

Response

I disagree with this proposition in that demand-side management measures do not necessarily result in permanent removal of load. Indeed, persistence rates, which measure the probabilities of failure in DSM, are frequently used to downgrade measure lives or savings estimates. This approach recognizes the uncertainty surrounding customer behavior and changes in usage incumbent in the installation of energy efficiency measures. For example, a customer may change its manufacturing processes or leave a facility and no longer use the measure installed. Thus, the load would either return or even increase from its previous levels. On a system-wide basis (New England not just individual service territories) there has unquestionably been a reduction of load that can be relied upon in terms of resource planning but the effects of energy efficiency are not applied in planning for a distribution system. I believe, that the inclusion of probabilistic analysis is a key component of producing standby rates that accurately calculate the costs incurred and benefits produced by standby customers.

In addition, as pointed out in the direct testimonies of Mr. Michelman and Mr. Greene, the use of certain technologies to provide energy supply to standby customers represent minor variations in customer load. Many DSM measures feature similar minor variations in customer load, yet do not receive differential treatment in their rates. Indeed, these minor variations also probably occur in a good portion of non-standby customers that have poorer load profiles.

Finally, Mr. Casten's testimony (p.4, lines 15-19) provides an example of how the proposed rates would adversely treat a DG installation relative to a DSM installation that had the same economic impact to the utility.

Information Request DTE-DOER-1-2

Refer to the Direct Testimony of Alvaro E. Pereira at 13, lines 2-8. Please explain how these characteristics should be accounted for in the design of standby rates. Please provide concrete numbers to substantiate your response.

Response

I do not have access to the customers' metered data although it has been requested of the company. Also, please see my response to Information Request NSTAR-DOER-1-3 in which I provide studies that detailed the manner in which such planning can take place.